

W.Q. LIB
TRENT R. (24)

STANDARDS DEVELOPMENT BRANCH OMOE
36936000010039

TD
380
.H35
1966
MOE

Copyright Provisions and Restrictions on Copying:

This Ontario Ministry of the Environment work is protected by Crown copyright (unless otherwise indicated), which is held by the Queen's Printer for Ontario. It may be reproduced for non-commercial purposes if credit is given and Crown copyright is acknowledged.

It may not be reproduced, in all or in part, for any commercial purpose except under a licence from the Queen's Printer for Ontario.

For information on reproducing Government of Ontario works, please contact ServiceOntario Publications at copyright@ontario.ca

**TD
380
.H35
1966**

Report on a water pollution
survey of the community of
Haliburton in the township of
Dysart et al in the county of

80294

THE
ONTARIO WATER RESOURCES
COMMISSION

Report on a
WATER POLLUTION SURVEY
of the
COMMUNITY OF HALIBURTON
in the
TOWNSHIP OF DYSART ET AL
in the
COUNTY OF HALIBURTON

Division of Sanitary Engineering

1 9 6 6

Report on a
WATER POLLUTION SURVEY
of the
COMMUNITY OF HALIBURTON
Township of Dysart Etal

<u>I N D E X</u>		<u>P A G E</u>	<u>N O.</u>
Introduction	-	1	
Interviews with Officials	-	1	
The Community of Haliburton	-	1	
Water Uses	-	2	
Water Supply	-	2	
Surface Water Drainage	-	3	
Sanitary Waste Disposal	-	4	
Municipal Refuse Disposal	-	4	
Sampling Procedure	-	4	
Sample Results	-	5	
Proposal concerning Water and Sewage Works.	-	6	
Summary	-	7	
Recommendations	-	7	

A P P E N D I C E S

Interpretation of Analyses
Laboratory Results - Tables 1, 11 and 111
Map of the Community of Haliburton

Report on a
WATER POLLUTION SURVEY
of the
COMMUNITY OF HALIBURTON
TOWNSHIP OF DYSART ET AL

INTRODUCTION

A water pollution survey of this community was performed on November 4, 5, and 11, 1965 in response to a request from municipal officials. Water pollution surveys are made by this Commission for the purposes of locating and recording sources of existing and potential water pollution. Where pollution sources are noted, recommendations are made concerning their abatement to the parties concerned.

The appendices to this report include an interpretation of the various tests performed on the samples, a tabulation of the sample results, and a map of the community showing the sampling point locations.

INTERVIEWS WITH OFFICIALS

The following officials were interviewed:

Dr. L. H. Carroll, Medical Officer of Health;
Mr. W. B. Wood, Municipal Clerk;
Mr. C. Winter, By-law Enforcement Officer.

THE COMMUNITY OF HALIBURTON

The community of Haliburton is an unincorporated hamlet in the Township of Dysart. The Township of Dysart is associated with eight other township for municipal purposes and is commonly

known as Dysart et al. Drag River which drains Drag Lake bisects the village as it empties into Head Lake. The waters of this lake then flow through Grass and Kashagamigamog Lakes to the Burnt River of the Trent system.

The topography of the community is very irregular with shallow soil depths in most areas.

The population within the area known as the town plot has been estimated at 1,000.

WATER USES

Recreational

The Rotary Park public bathing beach is located on Head Lake at the foot of Park Street.

Municipal

Storm drainage flows are directed to the river from one sewer in the community.

Industrial

Prior to this investigation, industrial wastes from Walling's Dairy had been discharged to a marshy inlet located on the west shore of Head Lake. At this time, measures were being taken to dispose of plant wastes on land.

WATER SUPPLY

It has been estimated that approximately 10 per cent of the water needs of the community is supplied by untreated surface water taken from the Drag River upstream of the town storm sewer.

Included among those premises reportedly employing river water are the following:

- a building housing the laundromat
- a garage
- the municipal offices
- the public washroom
- the community hockey arena
- the Canadian Legion Hall (this system reportedly employs chlorination)

Chlorination should be considered as minimum treatment for any potable surface water supply.

A ground-water supply known locally as "Dover Spring" and located at the south-east corner of the community is used extensively by both permanent and summer residents.

Apparently the water is of satisfactory bacteriological quality.

Two schools located near Head Lake employ infiltration-type wells.

SURFACE WATER DRAINAGE

Due to the topography of the village, surface run-off flows to the Drag River. One municipal storm sewer which drains the intersection of Maple Avenue and Highland Street discharges to the Drag River immediately downstream of Maple Avenue bridge. Sanitary wastes were evident in the discharge from this sewer. A ditch discharging immediately downstream of this sewer outfall appeared to relieve ground water flows originating in the immediate

vicinity of the river and had evidence of petroleum waste in it. A local fuel depot may be the source of this oil.

Surface drainage in the east end of town is conveyed via a small creek which discharges to Drag River at Rotary Park.

SANITARY WASTE DISPOSAL

The provision of adequate private sewage disposal systems in Haliburton has been somewhat difficult because of geological conditions and the lack of sufficient space on many premises in the business block.

There was evidence of waste disposal problems on the extension of Cedar Street at the rear of the main business block. Undoubtedly, the problem is increased during the tourist season.

The problem of pollution of the Drag River by wastes from the laundromat located on Maple Avenue near the river has been resolved by having all wastes collected and hauled off the premises for disposal.

MUNICIPAL REFUSE DISPOSAL

The local refuse disposal site is located north-west of the village with access from Highway No. 121. No problems have been reported concerning any effects this site might exert on water quality.

SAMPLING PROCEDURE

Samples were collected from pertinent locations on the Drag River, Drag Lake, tributary creeks, a municipal sewer outfall,

and from private ground and surface-water supplies.

SAMPLE RESULTS

The pertinent laboratory analyses results together with an interpretation of the various analyses employed and a map showing the location of sampling points are appended to this report.

The analyses employed in this survey to assess the quality of surface waters and outfall discharges were biochemical oxygen demand (BOD), suspended solids, total coliform count, phenols, and ether solubles.

The OWRC objectives for surface water quality are that the following concentrations are not exceeded:

BOD	-	4.0 ppm
Coliform Count	-	2400 coliforms/100 ml
Phenols	-	2 ppb average
	-	5 ppb maximum

Adequate protection of surface waters, except in certain specific instances influenced by local conditions, is generally obtained if the following waste discharge concentrations are not exceeded:

BOD	-	15 ppm
Suspended Solids	-	15 ppm
Phenols	-	20 ppb
Ehter Solubles	-	15 ppm

The sample results are tabulated in the appendices as follows:

Table I	- Drag River, Drag Lake and tributaries
Table II	- Municipal storm sewer and ditch outfalls
Table III	- Ground Water Supplies

Generally satisfactory water quality is indicated in the sample results pertinent to the river and lake. The outfall sample results together with the visual observations made during this investigation confirm the report that inadequately treated sanitary wastes have access to the storm sewer in the area of the main business block. The presence of phenols and ether solubles in these waste discharges suggests that petroleum products have access to the sewer and ditch.

The significant coliform count reported in the well sample from the Highlander Restaurant reflects the hazard to ground-water quality inherent in areas of limited lot size and where the wells are poorly constructed. Adequate measures of disinfection and chlorination, if necessary, should be adopted for this well.

PROPOSAL CONCERNING WATER AND SEWAGE WORKS

Municipal officials have applied to this Commission for the development of Provincially financed projects for both water and sewage works for the community. While the village has a definite need for both a water and sewage works it is possible that a municipal sewage works program should take priority if the financial status of the municipality will allow only one project.

SUMMARY

A water pollution survey of the Community of Haliburton located in the Township of Dysart was performed by Commission staff on November 4, 5 and 11, 1965. Samples were collected from the Drag River and Drag Lake and outfalls discharging thereto and also from specific ground-water supplies.

Although surface water quality is indicated as satisfactory inadequately treated wastes have access to the river via one storm sewer. Ground water quality has apparently suffered in the business block.

Since the residents rely on private water supplies and sewage disposal facilities, the local officials had requested this survey by OWRC staff to assess the need for municipal water and sewage works.] The findings of this investigation indicate the desirability of installing both facilities. The responsible parties should be fully aware of the risk involved in employing surface waters for potable supplies without the benefit of adequate disinfection.

INTERPRETATION OF ANALYSES

The analyses employed in this investigation to assess the quality of the surface water and outfall discharges are as follows:

Biochemical Oxygen Demand (BOD)

The BOD of sewage or polluted waters is the oxygen required for stabilization (natural purification in a stream) of the decomposable organic matter or chemical material by aerobic biochemical action. Unless otherwise noted, a five-day BOD determination with incubation at 20° C is reported. A high BOD is indicative of organic or chemical pollution.

Solids

The analyses for solids include tests for total, suspended, and dissolved solids. The first test measures both the solids in solution and in suspension. The results are reported in parts per million.

The suspended solids indicate the measure of undissolved solids of organic or inorganic nature in suspension. Land erosion, sewage, and industrial wastes are significant sources of suspended solids. The effect of suspended solids in water is reflected in difficulties associated with water purification and deposition in streams which could interfere with navigation and injure the habitat of fish. Where suspended solids values, ascertained by a quantitative analyses, approach 20 parts per million or less, laboratory difficulties usually result in these values being determined as turbidity, a qualitative analysis.

The dissolved solids are a measure of those solids in solution.

Turbidity

Turbidity is a measure of the optical properties of the fine suspended solids, such as clay, silt and finely divided organic matter, which cause light to be scattered or absorbed rather than be transmitted in straight lines through the sample of water. The results are reported in turbidity units.

Where suspended solids values approach 20 parts per million or less the values of suspended matter are usually determined as turbidity. Any attempt to correlate turbidity with the weight concentration of the suspended matter is impractical.

Membrane Filter Coliform Count

The membrane filter technique is employed to obtain a direct enumeration of coliform organisms and is reported per 100 millilitres of the sample. The presence of coliforms indicates pollution from human or animal excrement, or from some non-faecal sources.

Phenols

The phenolic compounds, collectively referred to as phenols, are those hydroxy derivatives of benzene or its condensed nuclei which are determined by the Gibbs Method with modifications. The results are reported in parts per billion (ppb).

Phenols are present in waste flows from many industrial processes. Dependant on the concentration, the presence of these materials may be toxic to fish or may taint the flesh of fish. Phenols in very minute concentrations will combine with chlorine to produce intense tastes and odours which are variously described as medicinal, chemical or iodoform.

Ether Solubles

Ether solubles are an indication that oil or grease is present in water. Oil usually occurs as an emulsion from industrial wastes or similar sources.

TABLE IDRAG RIVER, DRAG LAKE & TRIBUTARIES

Date Sampled: November 4, 1965

<u>Sample Point No.</u>		<u>5-Day BOD</u>	<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>	<u>Phenols in ppb</u>	<u>BACTERIOLOGICAL EXAMINATION M.F. Coliforms/100 ml.</u>
TBD 204.9	Drag River at Upstream limit of Haliburton	2.0	124	1	123		80
	Tap-Public Washroom- intake Drag River (downstream of TBD 204.9)						16
TBDX 204.35	Mouth of creek in Rotary Park at Drag River						630
TBD 204.3	Drag River at Head Lake	1.7	86	1	85		310
TBH 204.31	Head Lake at Rotary Park Beach						70
TBHY 203.7	Creek at High School at Head Lake						510
TBH 203.7	Head Lake at Highway No.121	1.1	68	4	64		140

NOTE: All analyses except pH reported in ppm unless otherwise indicated.

TABLE II

MUNICIPAL STORM DRAINAGE

Date Sampled: November 4, 1965

<u>Sample Point No.</u>	<u>Description</u>	<u>5-Day BOD</u>	<u>S O L I D S</u>			<u>Phenols in ppb</u>	<u>Ether Solubles</u>	<u>BACTERIOLOGICAL EXAMINATION M.F. Coliforms/100 ml.</u>
			<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>			
TBD 204.47W	Storm sewer outfall at Maple Ave. to Drag River	26	1000	22	978	20	12.0	4,300
TBD 204.47D	Ditch discharge below Maple Ave. to Drag River	--	1100	377	723	30	1800.0	----

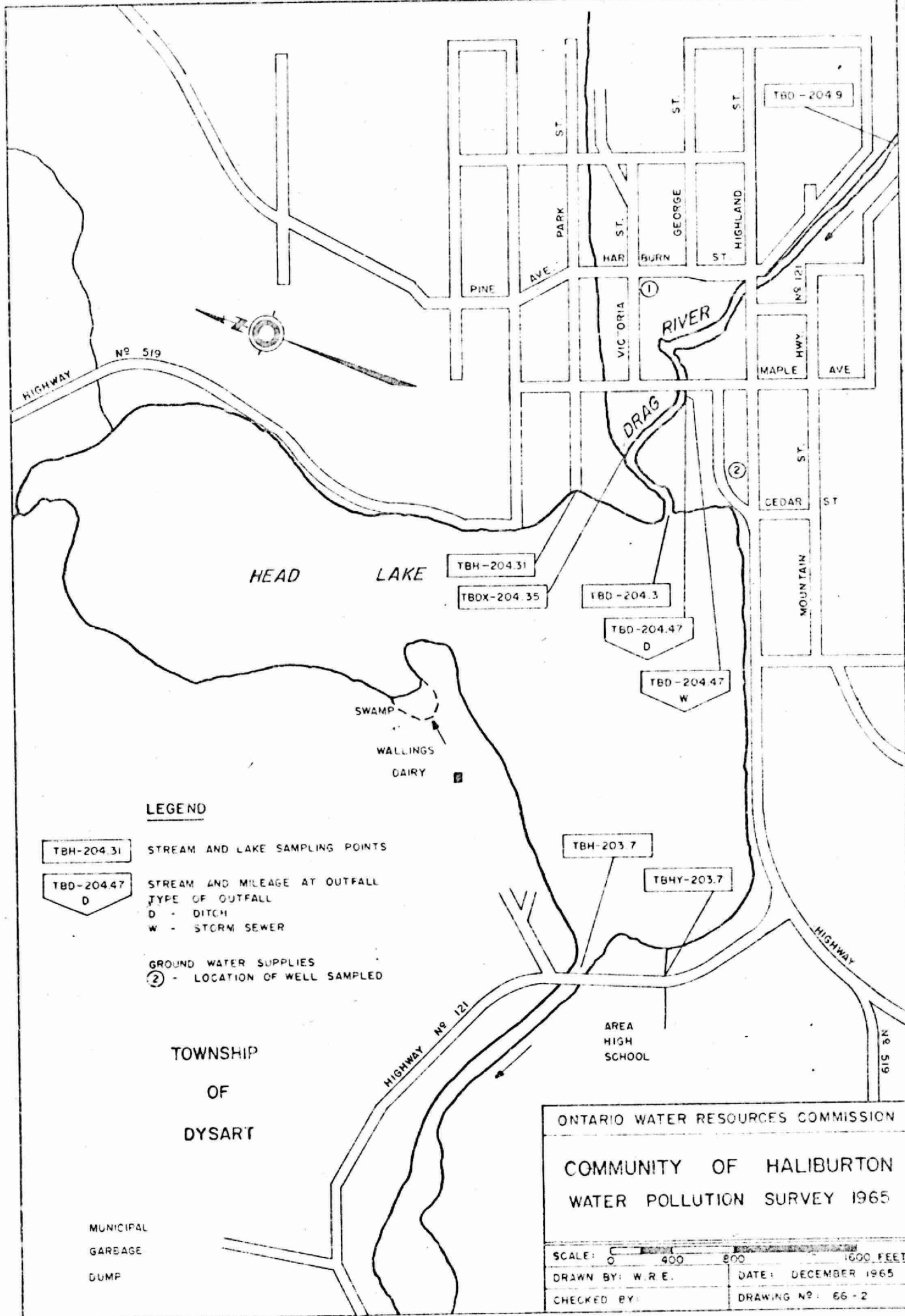
NOTE: All analyses except pH reported in ppm unless otherwise indicated.

TABLE III

GROUND WATER SUPPLIES

ate Sampled: November 4, 1965

<u>Description of Sampling Point</u>	<u>M.F. Coliforms per 100 ml.</u>
1. Thomas Irwin well - corner of Pine & Victoria Streets	0
2. Highlander Restaurant - Highland Street	18
3. Dover Spring - South-east corner of village (location not indicated on map)	0



LEGEND

- TBH-204.31 STREAM AND LAKE SAMPLING POINTS
- TBD-204.47 D STREAM AND MILEAGE AT OUTFALL
D - DITCH
W - STORM SEWER
- GROUND WATER SUPPLIES
② - LOCATION OF WELL SAMPLED

TOWNSHIP
OF
DYSART

MUNICIPAL
GARBAGE
DUMP

ONTARIO WATER RESOURCES COMMISSION

COMMUNITY OF HALIBURTON
WATER POLLUTION SURVEY 1965

SCALE: 0 400 800 1600 FEET
DRAWN BY: W.R.E. DATE: DECEMBER 1965
CHECKED BY: DRAWING NO: 66-2